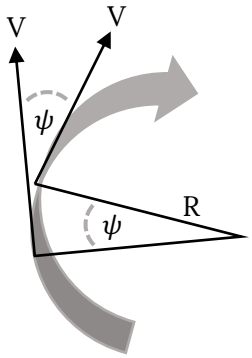$a_r = V\,(d\psi/dt)$